

Geneva Waters
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“Table With A View” South Shore, Fontana Photo By Fred Noer

Geneva Lake Environmental Agency
Quarterly Publication

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Geneva Lake Environmental Agency

Our Mission:

The Geneva Lake Environmental Agency is determined to maintain Geneva Lake's resources by protecting, preserving and enhancing a desirable lake and watershed quality.

<https://www.genevalakemanagement.com/>

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2020

The year 2020 no doubt will go down in history as one of the most unusual in recent memory. The COVID-19 impacts, not only on the physical health of some of us but what COVID-19 did to the routine of our everyday life, have been significant. Things at the Geneva Lake Environmental Agency sure have been different.

This newsletter is way overdue. We apologize for our tardiness. To keep our supporters and readers up to date, we have combined our 2020 summer and fall newsletters into one newsletter we are calling the 2020 GLEA Year-end Newsletter.

COVID-19 has and still is impacting the GLEA. Summer studies and workloads were changed several times as the virus came close to us. All GLEA staff have been quarantined sometime during the summer and/or fall due to encountering someone who tested positive.

Our summer intern came down with the virus. Thankfully, he is young. Although he was ill, he did overcome the virus relatively fast. We had to get along without him for several weeks. This caused us to cancel our planned study on the impact of zebra mussels on the lake-bottom critter population. This study has been conducted every four years since 1996. Right now we are planning on conducting the study during the summer of 2021.

Perhaps missed most at George Williams College (GWC) this summer was Music By the Lake. GWC closed down campus several times and went virtual for summer classes. This caused the GLEA staff to work out of their homes. We were still able to do some of our field work, such as beach testing, stream and lake sampling, and starry stonewort management, to name a few, but it was different.

The GLEA's administrative assistant has been working out of her home for a good portion of late fall/early winter. The main operation of the GLEA is still functioning out of our GWC office. There are days when I am the only person in the building. It is a

bit abnormal not having any activity on a college campus. In 2020, the abnormal became the normal.

NEW GENEVA LAKE WEATHER STATION

With the decommissioning of the Geneva Lake Atmospheric Monitoring Station, access to real-time local weather data became limited. Precipitation still is monitored and recorded, but temperatures and wind data were not recorded for the major portion of the summer and fall. A private weather station was established at the old atmospheric monitoring site in late fall and is now functioning. Along with precipitation data from the Belfort recording rain gauge, the new weather station will provide us with a range of meteorological data. We still are calibrating the equipment and figuring out how to process the data.

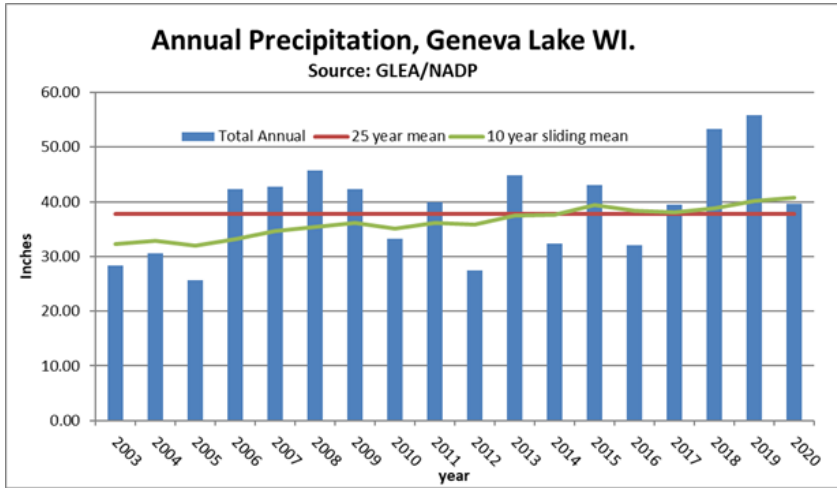
This summer we also established a nighttime light monitor to measure nighttime sky darkness. We are hoping to become a part of a network of dark-sky monitoring that's being established around Geneva Lake by the Geneva Lake Astrophysics and STEAM-Lakeshore Environment and Night Sky Sensor project

(GLAS-LENSS). GLAS is an effort to continue the education and outreach programs that were a part of Yerkes Observatory prior to the closing of Yerkes. GLAS has joined with the Geneva Lake Dark Sky Initiative to raise awareness of nighttime light pollution and to eliminate its negative effects on our natural environment around and including Geneva Lake.

RAIN AND RAIN AND THEN?

Anyone who has been around Geneva Lake for a while is aware that we have had wet years in the recent past. 2020 continued to be above average, with a precipitation total of 37.73 inches. That is above the 25-year average and the 10-year sliding average but less than the last two years.

During 2020, seven months were above the 25 yr. average and 5 months were below the 25 yrs. average. The highest monthly precipitation for 2020 was in August at 6.21 inches. May is usually the wettest month of the year. The driest month in 2020 was February, with 0.61 inch compared to the February 25-year average of 1.88 inches.



In the last 10 years there has been an upward trend in the annual average precipitation. We have seen the upward trend locally, especially during 2018 and 2019, both extremely wet years. Many lakes in the northern half of the state have experienced extreme shoreline flooding. Many lake homes and septic systems are under water. Will it go back to normal in the future? With weather, normal is defined by statistics and not by “the good old days.”

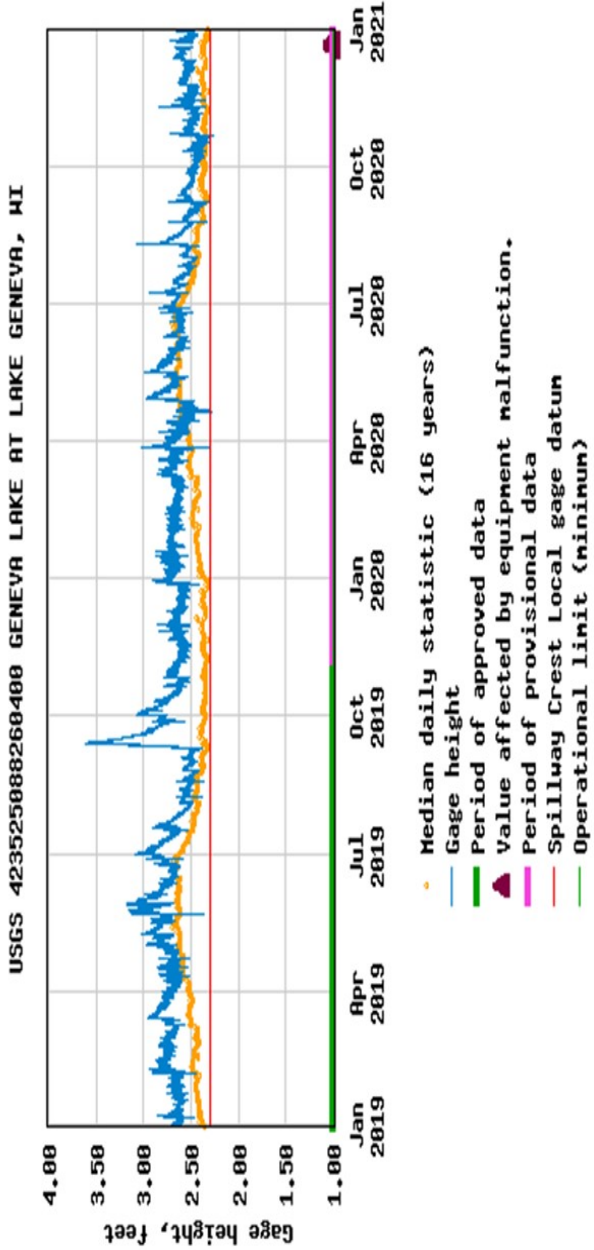
LAKE LEVEL

As mentioned above, wetter than normal years have led to lake levels being high in northern Wisconsin. Geneva Lake also has had high lake levels in the last couple of years, including 2020. The lake level has been above the spillway crest going back to the fall of 2017. The level also has been above the 16-year median daily lake level for most of that time, except for a short period in spring and in early summer 2020.

Geneva Lake spillway crest, the red line in the figure below, is at an elevation of 864.18 feet above NAVD88. At the time of this figure was produced, Geneva Lake was at 864.38 feet above NAVD88. The gauge height per the blue line at the left of the figure defines the lake level in feet above the datum for the lake level gauge.

Geneva Lake, WI lake level, spillway crest and historical (16 yrs.) median lake level as measured at the outlet structure at Center St, City of Lake Geneva WI.

Source U.S. Geological Service, <https://nwis.waterdata.usgs.gov/wi/nwis/uv?cb>





CLEAN BOATS, CLEAN WATERS

Last summer, with the financial help of two State of Wisconsin DNR grants, the Geneva Lake Environmental Agency hired four Clean Boats, Clean Waters (CBCW) inspectors to work at the five public launches on Geneva Lake. The CBCW crews worked primarily on weekends and occasional weekdays.

These CBCW staffers worked with boaters to remove aquatic invasive species from their boats as they came and went from the launches. A major portion of their time involved educating boaters about their responsibilities in reducing the spread of aquatic invasive species. This included cleaning off any hitchhiker plants or organisms that might be on the boats, trailers, or vehicles. The boaters also were informed about not transporting live bait, bait water, bilge water, live-well water, or any lake bottom mud from one place in the lake to another location. This involved mostly cleaning anchors as they were hauled out of the water.

During the summer, the CBCW crew put in a total of 884 hours, inspected 2,818 boats, and talked to 5,599 boaters about Clean Boats, Clean Waters. It is anticipated that CBCW inspectors will be at the Geneva Lake launches in 2021.

STARRY STONEWORT 2020

Since its discovery in Trinke Lagoon in the fall of 2018, starry stonewort (SSW), a macro-alga invasive, has been at the center of Geneva Lake aquatic plant management. From dredging to chemical treatment to hand pulling, different control efforts have been considered.

Dredging in the lagoon initially was considered to eradicate SSW and to prevent it spreading into the lake. Upon finding SSW in the lake during 2019, it was decided to attempt to control it rather than eradicate it. There is no known lake where starry stonewort has been eradicated once it has become established.

Two chemical treatments in 2019 killed some of vegetative parts of the plants (green parts) but had little if any impact on the

reproductive bulbils in the sediments. 2020 has found SSW in the lagoon denser than in 2019.

Last summer two separate hand-pulling operations at two separate locations were conducted to remove SSW. At the smaller population near the Trinke Lagoon outlet, SSW appears to have been successfully removed. At the second large population, SSW was pulled for three days, and approximately 50 cubic yards were removed. It was estimated that about half of the SSW bed at the second location was removed.

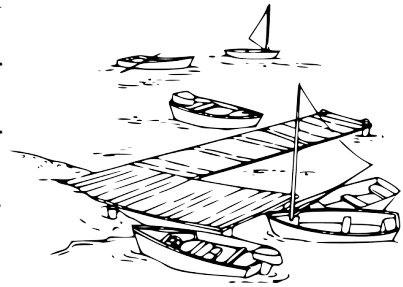
Divers hand pulling starry stonewort from Geneva Lake. Note diver in the water as he hands an orange bag of pulled SSW to a crew member on the barge loaded with SSW.



GLEA is assessing the results of the 2020 hand-pulling and putting together a 2021 recommended SSW management plan. More on this as it develops.

GENEVA LAKE 2020 BOAT COUNT

As it has in the past 35 years, the GLEA conducted its annual boat count of boats docked, moored, or available for in-out services on Geneva Lake. With the help of the Geneva Lake Water Safety Patrol, boats were counted on September 2. The total number of boats counted was 5,591. 805 or 14 percent were available for in-out service.



Motorboats again accounted for the largest number of boats, with 3,302 or 58 percent of the total. Other boats such as kayaks, canoes, rowboats, paddleboards, and miscellaneous crafts were the second largest category, with a total of 1,285. They were followed by personal watercraft at 569 and sailboats at 435.

Lakewide boat density for boats docked or moored on Geneva Lake was one boat for every 23.7 feet of shoreline. The highest boat densities were found in the southwestern area of the lake. The lowest boat density was the north shore of Linn Township.

GENEVA LAKE AQUATIC PLANT SURVEY

For the second year in a row, the GLEA sponsored an aquatic plant survey on Geneva Lake. Part of the reason for the back-to-back aquatic plant surveys was the concern about the spread of starry stonewort (SSW). No new populations of SSW were identified in the 2020 survey. The same populations identified in the 2019 survey were confirmed for 2020: the population in the Trinke Lagoon, the mixed population at the mouth of the lagoon, and the monoculture bed located about a quarter of a mile east of Trinke Lagoon in 14 feet of water.

The quantity and quality of the aquatic plant community as identified in 2020 were much the same as identified in 2019. A total of 1,268 sites was visited, with 628 having plants. Thirty different plants were identified.

The five most common plants found in the 2020 survey were: wild celery (*Vallisneria americana*), coontail (*Ceratophyllum demersum*), ditch grass (*Ruppia cirrhosa*), forked duckweed (*Lemna trisulca*), and the non-native Eurasian watermilfoil (*Myriophyllum spicatum*).

The two most common plants found in Geneva Lake's 2020 P.I. Aquatic Plant Survey.



Wild celery
(*Vallisneria americana*)



Coontail
(*Ceratophyllum demersum*)

The top three occurring aquatic plants found in the 2019 survey were the same as the top three for 2020, yet in a different order: 1. Coontail 2. eel grass 3. ditch grass. The average number of plants per site with plants was 2.1.

Two new plants were identified in 2020 that were not identified in 2019: forked duckweed (*Lemna triculca*) and small pondweed (*Potamogeton pusilius*). It is believed that these plants have been in Geneva Lake but were not sampled or identified in 2019.

Three aquatic invasive plants have been confirmed as being present in Geneva Lake: Eurasian watermilfoil (*Myriophyllum spicatum*), curly leaf pondweed (*Potamogeton crispus*), and starry stonewort (*Nitelopsis obtuse*).

When evaluated by several different criteria, including diversity, richness, coefficient of conservatism, and floristic quality, Geneva Lake's aquatic plant community is healthy and in good shape. The community is threatened by invasives and human activity, but if given the chance it can do a lot to protect itself.

BIG FOOT CREEK WATERSHED STUDY – PHASE 1

Started in the spring of 2019 to document and better understand what is causing the degradation of Big Foot Creek, the Big Foot

Creek Watershed Study was completed in early 2020. The study was made possible by funding from the Environmental Education Foundation to hire Badger High School student assistance, and a DNR grant to cover the lab costs.

The creek has a history of a reddish/orange discharge from the creek to Geneva Lake just south of the Big Foot Beach State Park swim beach. Previous samplings found that there were other issues with dissolved pollutants in the stream water.

Big Foot Creek's reddish/orange discharge to Geneva Lake just south of Big Foot Beach State Park's swim area.



The study sampled three stream sites and a background well sample monthly starting in May and running through October. Stream samples were collected during various stream conditions, ranging from low base flow to high flood flow.

The data collected from the stream during the six months of sampling indicated the creek water quality has serious problems with high total phosphorus, ammonia, iron, chemical oxygen demand, turbidity, solids, and low dissolved oxygen.

Previous studies also found Big Foot Creek to be one of the largest, if not the largest, phosphorus sources from the watershed. The 2019 study found total phosphorus loading to Geneva Lake from this stream still to be significant under all flow conditions.

The GLEA has prepared a complete report on Phase I that is presently being reviewed and is expected to be released soon.

LAKE TIDES

* The Geneva Lake Task Force, a consortium of several lake, county, and state groups committed to the improvement of Geneva Lake, has changed its name to the Geneva Lake Water Alliance. It is having a watershed study prepared and conducted by the Southeastern Wisconsin Regional Planning Commission.

* After being closed all summer, and causing some traffic rerouting and concerns about runoff, the South Lakeshore Drive improvement project in Fontana has been completed.

* The Geneva Lake Environmental Agency annual Ice-On Contest for all grade school students closed December 25. With COVID-19 and virtual learning, the response has not been as big as in the past. Now all we need to do is wait for the lake to freeze.

* Shannon Haydin, deputy director and conservationist in the Walworth County Land Use and Resource Management Department, has taken a job with the DNR in Madison. Fay Amerson,

the county senior urban conservationist, is retiring. The GLEA has worked closely with both of these professionals and will miss them. We wish them the best.

* The Walworth County Land Use and Resource Management Department has prepared an updated Walworth County Land and Water Resource Management Plan. It is in its final review and should be available in early 2021.

* The GLEA has prepared an assessment of the 2020 starry stonewort (SSW) management efforts that includes recommendations for SSW management for 2021. The assessment is being reviewed and should be released soon.

* The GLEA hired Applied Ecological Services to prepare a Phase II report on the Big Foot Creek Watershed Study. Phase II involves expanded sampling, watershed research, and modeling to identify best management practices to address the degraded water quality identified in Phase I. A final report is expected in early 2021.

- * A concentrated sub point-intersect aquatic plant survey will be conducted in 2021. This survey will focus on boat access sites to Geneva Lake with the intent of looking for other starry stonewort plant beds.

- * The GLEA is investigating the development of a new Aquatic Plant Management Plan to be prepared in late 2021 or early 2022.

- * A new Geneva Lake Management Plan also is being considered for the near future. The last one was completed in 2008.

- * During the winter of 2020-21, the GLEA hopes to gather boat launch data from the communities to get a better understanding of the annual number of boats launch on Geneva Lake each year.

- * The Geneva Lake Environmental Agency is looking for a director who will oversee the operation of the agency. For more information, contact the GLEA.

Geneva Lake Environmental Agency

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Phosphorus is the most problematic pollutant in the lake. Most lawns in our area don't need phosphorus. When lawn fertilizers run off into the Geneva Basin, they feed the unsightly, smelly and potentially toxic algal bloom and promote the growth of weeds in the lake.

USE OF PHOSPHORUS FERTILIZERS IN THE GENEVA LAKE SHORELINE AREAS IS

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